

Sub E2  
10. A method for generating a modified injection pressure waveform for feedback control of a pressure exerted on a resin in an injection molding machine, comprising the steps of:

- a) storing an injection pressure waveform in a memory;
- b) displaying on a display, the injection pressure waveform stored in said step (a);
- c) modifying a portion of the injection pressure waveform displayed in said step (b);
- d) storing the modified injection pressure waveform modified in said step (c), in the memory.

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11. A method as claimed in claim 10, wherein said step (c) includes the substeps of

- c1) designating first and second points on the injection pressure waveform displayed on the display, and
- c2) changing the injection pressure waveform between the two points, into a straight line connecting the first and second points.

12. A method as claimed in claim 10, wherein said step (c) includes the substeps of

- c1) designating first and second points on the injection pressure waveform displayed on the display,
- c2) designating a third point on the injection pressure waveform between the first and second points, and
- c3) changing the injection pressure waveform between the first and second points, into a curve connecting the first, second and third points.

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#### R E M A R K S

#### STATUS OF CLAIMS

In the final Office Action, claims 1-6 were noted as pending in the application and all claims were rejected. In addition, the specification was objected-to. By the present Amendment, new

claims 7-12 have been added to the subject application so that claims 1-12 are now pending in the subject application.

The objection and rejections are addressed separately below.

**OBJECTION TO THE SPECIFICATION  
UNDER 35 U.S.C. §112, FIRST PARAGRAPH**

On page 2, paragraph 3 of the Office Action, the specification was objected to under 35 U.S.C. §112, first paragraph. Essentially, this objection to the specification is the same as that given in the previous Office Action.

With respect to claims 1-3, it is submitted that the methods recited in claims 1-3 do not require any determination of the points on an injection pressure waveform or how to determine whether a straight or arcuate waveform should be chosen, because the injection pressure waveform is determined in claims 1-3 by detecting a pressure acting on a resin during the execution of an injection/dwell stage of injection pressure control. Thus, the objection to the specification under 35 U.S.C. §112, first paragraph, is respectfully traversed for this reason.

With respect to claims 4-6, it is submitted that these claims have been amended to recite that the injection pressure waveform displayed on the display device, is modified either by designating two points and generating a straight line connecting these two points, or by designating two points on the injection pressure waveform displayed on the display device, designating a third point on the injection pressure waveform between the first and second points, and generating a curve connecting the first, second and third points. Therefore, claims 4-6 as amended, recite elements capable of modifying an injection pressure waveform displayed on a display device, by drawing a straight line or a curve for the modified portion of the injection pressure waveform. Because the specification does teach how to modify an injection pressure waveform displayed on the display

device, it is submitted that these claim amendments overcome the objection to the specification under 35 U.S.C. §112, first paragraph.

In addition, the objection to the specification is respectfully traversed because the method and/or apparatuses recited in claims 4-6, provide the capability of modifying a portion of an injection pressure waveform. How specifically this modification is performed for a given application (e.g., for a particular mold) is left to one of ordinary skill in the art to determine either by using the experience of and/or knowledge available to one of ordinary skill in the art, or even by trial-and-error which would not require undue experimentation. Thus, the objection to the specification under 35 U.S.C. §112, first paragraph, is respectfully traversed for this reason.

For the foregoing reasons, withdrawal of the objection to the specification under 35 U.S.C. §112, first paragraph is requested.

**REJECTION OF CLAIMS 1-6 UNDER 35 U.S.C. §112, FIRST PARAGRAPH**

On page 2, item 5 of the Office Action, claims 1-6 were rejected under 35 U.S.C. §112, first paragraph, for the reasons set forth in the objection to the specification.

Because the objection to the specification under 35 U.S.C. §112, first paragraph, is not relevant to claims 1-3 as noted above with respect to the objection to the specification under 35 U.S.C. §112, first paragraph, the rejection of these claims under 35 U.S.C., §112, first paragraph, is respectfully traversed. Withdrawal of the rejection is requested.

With respect to claims 4-6, these claims, have been amended as necessary to overcome the rejection under 35 U.S.C. §112, first paragraph, for the reasons stated above with respect to the objection to the specification.

In addition, it is submitted that claims 4-6 meet the requirements of 35 U.S.C. §112, first paragraph, because the apparatuses recited in claims 4-6 are directed to providing the

capability to modify an injection pressure waveform, and not specifically to how the injection pressure waveform should be modified for a given application. Further, those of ordinary skill in the art would realize how to modify an injection pressure waveform from experience, or could even determine how to modify an injection pressure waveform by simple trial-and-error without any undue experimentation. Accordingly, the rejection of claims 4-6 under 35 U.S.C. §112, first paragraph, is respectfully traversed for this reason.

#### **REJECTION OF CLAIMS 1-3 UNDER 35 U.S.C. §103**

On page 2, paragraph 7 of the Office Action, claims 1-3 were rejected under 35 U.S.C. §103 as being unpatentable over Japanese Kokai 61-197218 in view of Japanese Kokai 61-154820.

The Office Action relies upon Japanese Kokai 61-197218 to disclose the storing of optimum pressure waveforms in a memory, which waveforms are used as a target pressure for feedback control of an injection molding machine.

The Office Action relies upon Japanese Kokai 61-154820 to teach the use of set values set by a pressure setting device as a target for feedback control.

Essentially, the Office Action alleges that the operation of the injection molding machine during trial injection and the adjustment of molding conditions to obtain the target waveform, would have been obvious because Japanese Kokai 61-197218 adjusts pressure, speed and temperature so as to obtain the target waveform in the next molding operation performed.

However, the combination of Japanese Kokai 61-197218 and Japanese Kokai 61-154820, fails to disclose a step of detecting a pressure acting on a resin during an injection/dwell stage of the injection pressure control to generate an injection pressure waveform based on a function of time. Further, the combination of Japanese Kokai 61-197218 in view of Japanese Kokai 61-154820, fails to disclose a step of setting the detected injection pressure waveform as a target injection pressure waveform for

pressure feedback control in the injection/dwell stage. This feature of the claimed invention helps to simplify the creation of an injection pressure waveform because the actual injection pressure detected during injection molding, is set to be used as a target injection pressure waveform for pressure feedback control. Thus, the claimed invention provides an advantage relative to the prior art by eliminating the need for an operator of the injection molding machine, to directly enter the target injection pressure waveform. Thus, it is submitted that claim 1 as amended patentably distinguishes over the prior art.

Claims 2-3 as amended depend directly or indirectly from claim 1 as amended and include all the limitations of that claim. Thus, for the reasons stated above with respect to claim 1 as amended, it is submitted that claims 2 and 3 as amended patentably distinguish over the prior art.

#### **REJECTION OF CLAIMS 4-6 UNDER 35 U.S.C. §103**

On page 3, paragraph 2 of the Office Action, claims 4-6 were rejected under 35 U.S.C. §103 as being unpatentable over German Offenlegungsschrift 2,916,782.

Essentially, the Office Action alleges that the German patent discloses storing, displaying and correcting a pressure waveform on a display, using a light pencil.

However, claim 4 as amended recites a step of determining whether a second mold is similar to a first mold, and a step of displaying a first injection pressure waveform corresponding to the first mold based on the step of determining. Also, claim 4 as amended recites a step of modifying the first injection pressure waveform using the display, to generate a second injection pressure waveform for the second mold. Further, claim 4 as amended recites a step of setting the second injection pressure waveform for the second mold, and a step of performing injection molding based on the second injection pressure waveform. In contrast, the German patent fails to disclose any step of determining whether a second mold is similar to a first

mold, so that a first injection pressure waveform of the first mold can be used to generate a second injection pressure waveform for the second mold without requiring an operator of the injection molding machine, to enter the entire injection pressure waveform. Thus, it is submitted that claim 4 patentably distinguishes over the prior art.

Claim 5 recites a storage means for storing injection pressure waveforms, and a display control means for displaying a selected one of the injection pressure waveforms stored in the storage means. Claim 5 as amended also recites an injection pressure waveform changing means for modifying the selected one of the injection pressure waveforms by designating two points in the selected one of the injection pressure waveforms displayed on the display device, and by changing the selected one of the injection pressure waveforms between the two points into a straight line connecting the two points, to generate a modified injection pressure waveform, and for modifying the selected one of the injection pressure waveforms by designating two points in the injection pressure waveform as a starting point and an end point individually, designating one point between the starting and end points, and changing the selected one of the injection pressure waveforms between the starting and end points into a curve connecting the one point and the starting and end points. Therefore, in the claimed invention, modification of an injection pressure waveform is simplified relative to the German patent, because a user need only designate two or three points to modify the injection pressure waveform displayed on the display device. In contrast, with the apparatus disclosed in the German patent, a user must draw the injection pressure waveform by hand using the light pencil. Thus, the machine recited in claim 5 affords greater simplicity relative to the prior art. Thus, it is submitted that claim 5 as amended patentably distinguishes over the prior art.

For similar reasons to those stated above with respect to claim 5 as amended, claim 6 as amended patentably distinguishes over the prior art.

#### **NEW CLAIMS 7-12**

By the present Preliminary Amendment, new claims 7-12 have been added to the subject application. New claims 7-8 depend from claim 4 as amended and include all the limitations of that claim. Thus, for the reasons stated above with respect to the rejection of claims 4-6 under 35 U.S.C. §103, it is submitted that claims 7-8 patentably distinguish over the prior art.

For similar reasons to those stated above with respect to the rejection of claims 1-3 under 35 U.S.C. §103, it is submitted that new claims 9 and 10 patentably distinguish over the prior art.

New claims 11-12 depend directly from new claim 10 and include all the limitations of that claim. Thus, for the reasons stated above with respect to new claim 10, it is submitted that new claims 11-12 patentably distinguish over the prior art.

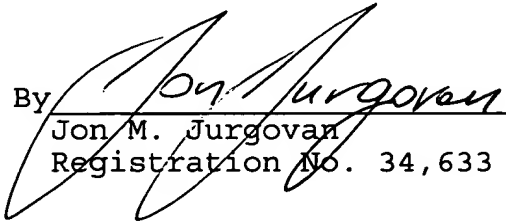
#### **SUMMARY**

It is submitted that the specification and claims 1-6 as amended meet the requirements of 35 U.S.C. §112, first paragraph. Also, it is submitted that claims 1-6 as amended and new claims 7-12 patentably distinguish over the prior art. Accordingly, reconsideration of claims 1-6 as amended, consideration of new claims 7-12 and an early Notice of Allowance are earnestly solicited.

If any additional fee is required in connection with the filing of this Preliminary Amendment, please charge the fee to our Deposit Account No. 19-3935.

Respectfully submitted,

STAAS & HALSEY

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Dated: November 18, 1993